AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.   (Previously Presented)   A battery state diagnosing device comprising:

a load applying section applying a load to a battery;

a measuring section measuring input and output characteristics of the battery in response to the applied load; , and

a diagnosing section diagnosing a state of the battery by applying a result of the measurement to a mathematical expression obtained by a system identification method, wherein

said battery state diagnosing device applies the load to the battery as a current load.

2.   (Original) The battery state diagnosing device as set forth in claim 1, wherein:

the measured output characteristic is a terminal voltage of the battery; and

when diagnosing the battery by system identification, an electromotive force component of a fluctuating terminal voltage of the battery is removed as a bias,

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and a slight voltage fluctuation after the electromotive force component has been

removed is amplified and used for the diagnosis by the system identification.

    3.   (Currently Amended) The battery state diagnosing device as set forth in

claim 1, wherein:

    the measured output characteristic is a terminal voltage of the battery;

and

    when diagnosing the battery by system identification, a fluctuating

terminal voltage of the battery is separated into a perpendicular component which

derives from a serial resistance of the battery, and a component representing CR

dynamics;

    the perpendicular component is removed from the terminal voltage; and

    a ~~slight~~ voltage fluctuation after the perpendicular component has been

removed is amplified and used for the diagnosis by the system identification.

    4.   (Original) The battery state diagnosing device as set forth in claim 3,

wherein:

    in order to remove the perpendicular component from the terminal

voltage, a voltage value at a rise of a voltage pulse representing the electromotive

force component of the battery is calculated from a voltage wave form of the terminal

voltage, and the calculated value of the voltage pulse is subtracted from the terminal

voltage.

5.   (Previously Presented)   A battery state diagnosing device

comprising:

a load applying section applying a current to a battery,

a measuring section measuring input and output characteristics of the

battery in response to the applied load, and

a diagnosing section diagnosing a state of the battery by applying a

result of the measurement to a mathematical expression obtained by a system

identification method, wherein

the load applying section applies a current to the battery when the

battery is not supplied with fuel. .

6.   (Previously Presented) A battery state diagnosing device for applying

load to a battery, measuring input and output characteristics of the battery, and

diagnosing a state of the battery by applying a result of the measurement to a

mathematical expression obtained by a system identification method, said battery state

diagnosing device comprising:

a circuit section for constituting a closed circuit by serially connecting

the battery to a current load when diagnosing the battery;

a measuring section, connected to the circuit section, for measuring a

terminal voltage of the battery and a current flowing in the circuit section; and

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a diagnosing section for diagnosing, by the system identification method, a state of the battery based on a result of the measurement by the measuring section.

7.   (Previously Presented) A battery state diagnosing device for applying a current to a battery, measuring input and output characteristics of the battery, and diagnosing a state of the battery by applying a result of the measurement to a mathematical expression obtained by a system identification method, the battery being a fuel cell that is not supplied with fuel,

said battery state diagnosing device comprising:

a circuit section for constituting a closed circuit by serially connecting the battery to a voltage source when diagnosing the battery;

a measuring section, connected to the circuit section, for measuring a terminal voltage of the battery and a current flowing in the circuit section; and

a diagnosing section for diagnosing, by the system identification method, a state of the battery based on a result of the measurement by the measuring section.

8.   (Previously Presented) A battery state diagnosing method comprising the steps of:

applying a load to a battery;

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measuring input and output characteristics of the battery in response to

the applied load; and

diagnosing a state of the battery by applying a result of the

measurement to a mathematical expression obtained by a system identification

method, wherein

said step of applying a load to the battery serially connects the battery

to a current load.

9.   (Original) The battery state diagnosing method as set forth in claim 8,

wherein:

the measured output characteristic is a terminal voltage of the battery;

and

when diagnosing the battery by system identification, an electromotive

force component of a fluctuating terminal voltage of the battery is removed as a bias,

and a slight voltage fluctuation after the electromotive force component has been

removed is amplified and used for the diagnosis by the system identification.

10.   (Original) The battery state diagnosing method as set forth in claim 8,

wherein:

the measured output characteristic is a terminal voltage of the battery;

and

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when diagnosing the battery by system identification, a fluctuating

terminal voltage of the battery is separated into a perpendicular component which

derives from a serial resistance of the battery, and a component representing CR

dynamics;

the perpendicular component is removed from the terminal voltage; and

a slight voltage fluctuation after the perpendicular component has been

removed is amplified and used for the diagnosis by the system identification.

11.   (Original) The battery state diagnosing method as set forth in claim 10,

wherein:

in order to remove the perpendicular component from the terminal

voltage, a voltage value at a rise of a voltage pulse representing the electromotive

force component of the battery is calculated from a voltage wave form of the terminal

voltage, and the calculated value of the voltage pulse is subtracted from the terminal

voltage.

12.   (Previously Presented) A battery state diagnosing method comprising

the steps of:

applying a current to a battery,

measuring input and output characteristics of the battery in response to

the applied current, and

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diagnosing a state of the battery by applying a result of the

measurement to a mathematical expression obtained by a system identification

method, wherein

the current is applied to the battery when the battery is not supplied

with fuel, and

said step of applying a current serially connects the battery to a

voltage source.

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